

**A NEW MICROCULEX, ELONGATUS, FROM COLOMBIA, WITH
NOTES ON THE SUBGENUS***

(DIPTERA, CULICIDAE)

By LLOYD E. ROZEBOOM¹ AND WILLIAM H. W. KOMP²

Of the 18 described species of mosquitoes belonging to the neotropical subgenus *Microculex*, all but two have epiphytic bromeliads as their natural breeding habitat. Another unusual species was named *C. abnormalis* by Lane (1936), but that author has informed us that this species is actually a *Culex* (*Culex*). One of the above two is *C. restrictor* D. & K., which is very similar to the *Melanoconion* species in the structure of the apical lobe of the sidepiece, but which we are considering to be a *Microculex* because of the presence of a long, pointed, retrorse process on the inner plate of the mesosome, and also by the presence of an isthmus connecting the inner plates (Komp, 1935), which is characteristic of this subgenus. It is interesting that this species, which could almost seem to be transitional between the subgenera *Melanoconion* and *Microculex*, should breed in rot holes in trees, a situation in which other *Melanoconion* species may be found occasionally, but which is abnormal for *Microculex*. The second is *C. neglectus* Lutz, which is found in bamboo internodes.

It is the purpose of this paper to describe a new species of *Microculex* which also has an unusual breeding habitat. It has been found as a larva only in uncut bamboo internodes perforated with holes bored by insects. In this situation it was associated with larvae of *Culex* (*Isostomyia*) *bamborum* R. & K., *Culex* (*Carrollia*) *wilsoni* Lane and Whitman, *Anopheles* (*Kerteszia*) *bambusicolus* Komp, and *Wyeomyia oblita* Theobald.

***Culex* (*Microculex*) *elongatus*, new species**

Female. A small dark mosquito without distinctive markings. *Head:* Proboscis about as long as the fore femur, enlarged on apical third, and clothed with broad flat dark scales. Palpus dark, about one-sixth the length of the proboscis. Clypeus, and torus of antenna pale brown. Vertex with narrow curved dark decumbent scales centrally, narrow curved white decumbent scales behind and along eye margins, and dark erect forked scales; a large patch of broad flat white scales laterally. *Thorax:* Prothoracic lobes pale brown, with a few dark setae. Posterior pronotum with a few narrow dark scales above. Scutum clothed with long dark bristles and narrow curved dark scales; a few pale scales in

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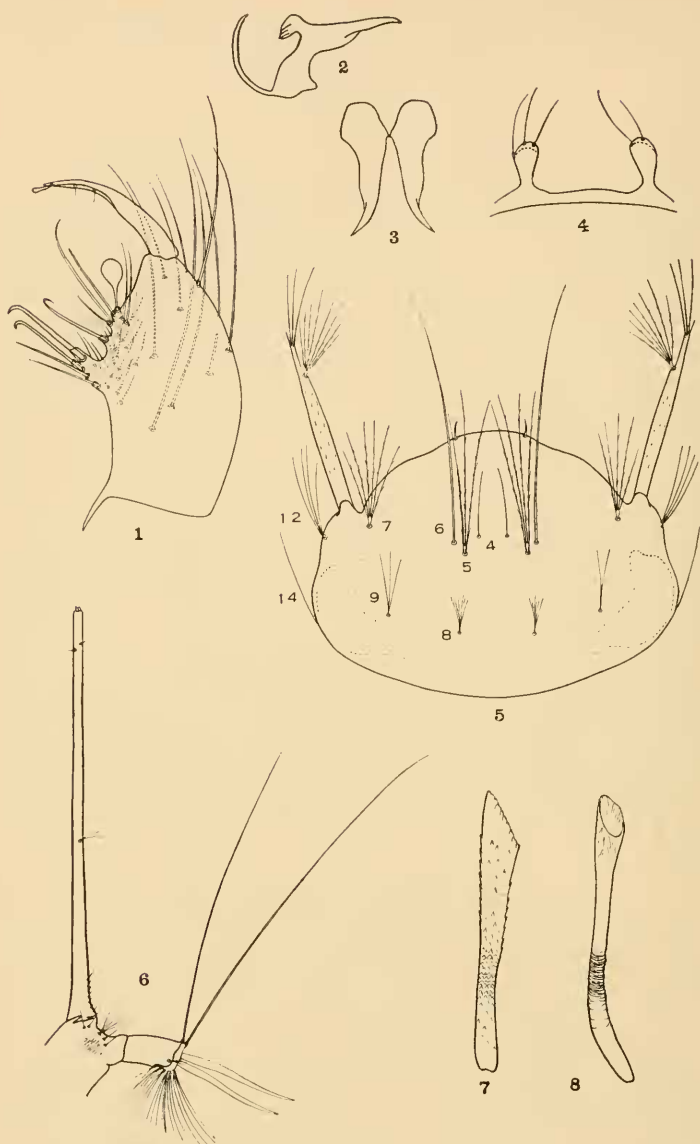


PLATE 23. CULEX (MICROCULEX)

Figs. 1-7, *C. elongatus*; fig. 1, sidepiece of male terminalia; fig. 2, mesosome, lateral view; fig. 3, mesosome, ventral view; fig. 4, lobes of ninth tergite; fig. 5, head of larva; fig. 6, terminal abdominal segments of larva; fig. 7, trumpet of pupa; fig. 8, *C. inimitabilis*, trumpet of pupa.

antescutellar depression and before wing-base; two narrow bare submedian stripes converging posteriorly. Scutellum with dark and pale scales on mid-lobe. Pleura dark, with a paler area centrally, enclosing a small patch of pale scales on the upper part of the sternopleuron. Coxae pale; femora dark above, pale beneath; tibiae and tarsi all dark. Wing scales dark. *Abdomen*: Tergites dark-sealed, with basal lateral segmental white patches; venter pale.

Male. Coloration similar to that of female. Basal pale markings of the abdominal tergites sometimes enlarged to form broad basal bands on terminal segments. Palpus dark, about four-fifths as long as the proboscis. *Terminalia* (fig. 1): Sidepiece about twice as long as broad, with a number of long setae on outer surface and a fairly dense patch of short setae on the outer surface, extending from below the base of the inner division of the lobe to the apex of the outer division. One of these setae near apex is exceptionally long. Inner division of the lobe of sidepiece stoutly columnar, with two stout, hook-tipped terminal rods, the inner more slender and inserted slightly basad of the outer; several stout setae on base of column. Outer division of lobe sessile, but demarcated by the characteristic arrangement of the appendages. These consist of a distal seta and a slender-stemmed, roundedly expanded leaf, inserted close together; an outer pair of long, slender setae, inserted close together; a stout basal seta, and a more slender median seta. Clasper about one-half the length of the sidepiece, in side view tapering evenly to tip, with an appendiculate terminal spine, and two fine setae beyond the middle. Inner plate of mesosome (fig. 2) L-shaped in side view, the upper arm tapering to a point; a short, broad, rugose, retrorse process at the angle of the L. Upper arm of mesosome in ventral view (fig. 3) with expanded apex, and a retrorse process appearing as a short, curved, pointed spine. Tenth sternites terminating in a comb-like row of about six short, stout teeth. Lobes of ninth tergite (fig. 4) well separated; digitiform, with narrow apical ridge and two or three slender setae near the tip.

Larva. *Head* (fig. 5): Antenna shorter than length of head; a multiple-haired tuft situated four-fifths the distance from the base; basal four-fifths of shaft with minute spicules; terminal appendages consisting of three long slender setae, a short stout spine, and a small papilla. Preclypeal spines stout. Head hair 4 single, slender; hair 5 long, extending beyond clypeal margin, 3- or 4-branched; hair 6 single, extending beyond tips of antennae; hair 7 multiple, extending to about middle of antenna; hair 8 small, fine, multiple; hair 9 very fine, 2- or 3-branched, extending beyond insertion of hair 5; hair 12 multiple, extending to about middle of antenna; hair 14 fine, single. *Thorax*: Skin glabrous. *Abdomen* (fig. 6): Skin glabrous. Long lateral hair 6 very long, double on segments I and II; short and 2- or 3-branched on segments III-VI. Comb of segment VIII with many scales in a patch; individual scale very long, slender, with expanded fringed apex. Siphon exceptionally long, about 14 times the width at base; slender, cylindrical, with a single pair of small ventral single or double hairs at about the middle; a pair

of small single hairs on ventral surface near the apex, and a pair of minute hairs on dorsal surface basad of the subterminal ventral hairs. Pecten composed of six to eight slender teeth at base of tube, gradually increasing in length towards apex of tube; teeth apparently unfringed. Anal segment cylindrical, over twice as long as wide, ringed by the plate; a pair of long, single dorsal hairs on each side; saddle hair small, multiple. Anal gills long, slender, pointed.

Pupa. Trumpet darkly pigmented, variable in shape, being relatively short and straight, the apical portion expanded as in Fig. 7, or long, evenly slender, as in Fig. 8; with shallower "scales" before the middle, forming a transverse rugose area. Abdominal segments IV to VI with hair 5 (of Knight and Chamberlain, 1948) long, single.

Types: Holotype: Male, with mounted terminalia and associated larval and pupal skins, from bamboo internodes at Acacias, Intendencia of Meta, Colombia, on 3 June 1947 (L. E. Rozeboom); deposited in U. S. National Museum. *Paratypes:* Three larvae, one female and one male with mounted terminalia, the collection data the same as for type; two males with mounted terminalia and three females, from bamboo internodes, Chichimene, Intendencia of Meta, 11 August 1947 (Marston Bates). Paratypes deposited in the U. S. National Museum and in the entomological collection of the Department of Parasitology, School of Hygiene and Public Health, The Johns Hopkins University.

TAXONOMIC DISCUSSION

In the subgenus *Microculex*, the male of one species, *C. azymus* D. & K., is unknown. The males of the other species have been described, but because of the paucity of characters that are available for the separation of the species by the male terminalia, it has been difficult to recognize the species, using existing keys and descriptions. We have therefore examined all of the *Microculex* types in the U. S. National Museum, as well as material in our own collections which has been compared with the types. As a result we have constructed the key to males, given below, by which *C. elongatus* may be separated from all other *Microculex* species. In addition to the differences in the genitalia indicated in the key, *C. elongatus* is distinct from *C. inimitabilis*, which it closely resembles, in its different breeding habits, in marked differences in the structure of the larval siphon, and in a pupal character. We have taken larvae from bromeliads in Villavicencio, Colombia, which correspond to Dyar's (1928) description of *C. inimitabilis*, in that they have a siphon about ten times as long as the basal width, with a single pair of rather prominent hair tufts at about the middle. The corresponding pupa has a long, slender, slightly curved air trumpet (Fig. 8), with a transversely rugose area before the middle, and with a slightly expanded

apex. Hair 5 on abdominal segments IV and V of the pupa is very long and double, and on VI it is shorter than the length of the segment, with five or six branches. In contrast, the larvae of *C. elongatus* has a strikingly long and slender siphon, with a minute pair of ventral hair tufts, and two smaller more apical tufts. The trumpet of the pupa is too variable to be used to separate the species from *inimitabilis*, but hair 5 of abdominal segment VI as well as of IV and V is long and slender in this species.

In the separation of species of *Microculex* by the male terminalia, the appearance of the outer division of the lobe of the sidepiece is likely to cause confusion. We have recognized the following conditions in this lobe: (1) outer division entirely absent, and represented only by two or three setae from prominent tubercles, as in *C. stonei*; (2) outer division represented by a prominent row or patch of setae which completely obscures the usual appendages, as in *C. imitator*; (3) outer division a distinct, elevated lobe, as in *C. albipes*; and (4) outer division sessile, but with the characteristic appendages arranged in such a manner that the lobe is clearly demarcated. In species such as *C. aphylactus*, the pigmentation of the integument between the appendages sets off the lobe so sharply that Root (1927) actually described the outer division as being a capitate lobe. In other species, such as *C. inimitabilis*, the lobe is less distinct, but is nevertheless outlined by its appendages. The appendages in this group of species are characteristically six in number, arranged more or less in pairs. The most distal pair consists either of two setae, or a seta and a leaf. External to this pair there is a distinctive pair of long setae, inserted close together. The basal pair, consisting of a stout, usually hook-tipped seta and a more slender seta, may be inserted close together, as in *C. aphylactus*, or they may be separated, as in *C. elongatus*.

One species which may be misplaced in our key is *C. hedys*. Root (1927) described the outer division of the lobe as being represented by a large patch of short hairs. Actually these hairs seem to be on the side of a sessile lobe, on which can be made out at least two distal paired setae, the stout, hook-tipped basal seta, and a fine median one. Nevertheless, because the typical setae of the outer division are more or less obscured by a patch of hairs, it may be less confusing if *C. hedys* is included with *C. daumastocampa*, *imitator*, and *jenningsi*.

Figure 13 illustrates the only male specimen of *C. neglectus* in the U. S. National Museum; it shows that the usual appendages of the apical lobe are also obscured by the dense patch of setae, although the apical leaf and seta, and the basal hooked appendage are distinct. It is probable that a longer

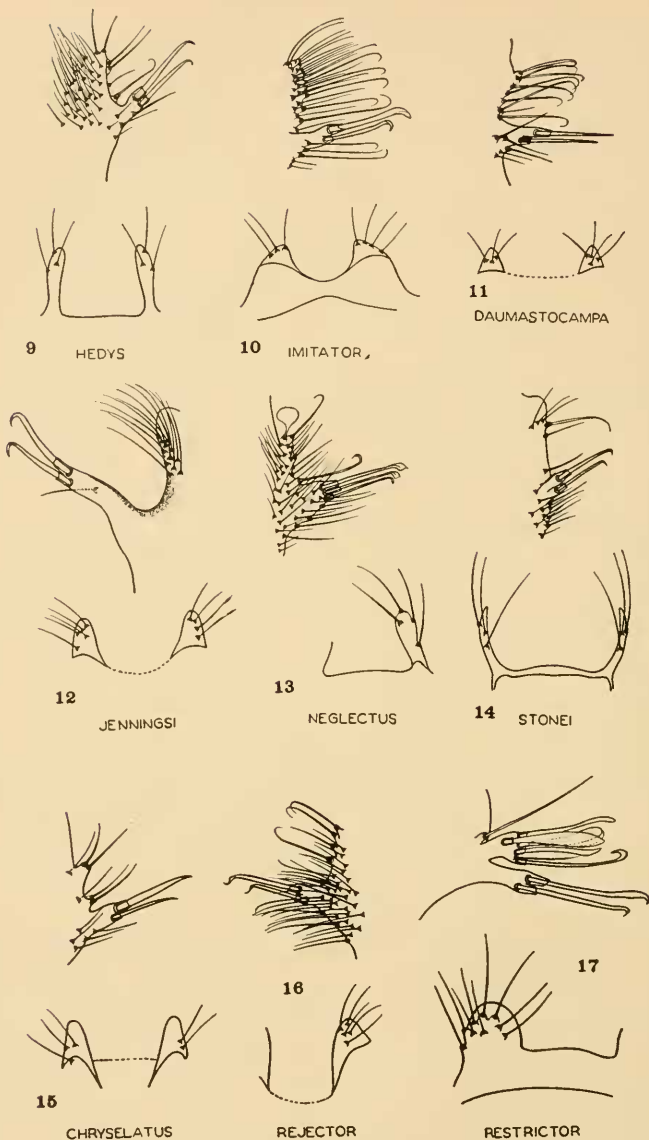


PLATE 24. *CULEX* (*MICROCULEX*), APICAL LOBE OF SIDEPIECE AND LOBES OF NINTH TERGITE OF MALE TERMINALIA

Fig. 9, *C. hedys* (from type); fig. 10, *C. imitator* (J. H. U. coll.); fig. 11, *C. daumastocampa* (from type); fig. 12, *C. jenningsi* (from type); fig. 13, *C. neglectus* (USNM coll.); fig. 14, *C. stonei* (J. H. U. coll.); fig. 15, *C. chryselatus* (from type); fig. 16, *C. rejector* (USNM coll.); fig. 17; *C. restrictor* (USNM coll.).

series of *neglectus* would reveal specimens with a less dense patch of setae, so that the appendages of the lobe would be distinct. Such specimens would be very similar to if not identical with *elongatus*. That *elongatus* is not the same as the U. S. National Museum specimens identified by Dyar and Lutz as *neglectus* is shown by the fact that the latter is without basal white patches or bands on the adult abdomen. In *elongatus* these are large and distinct.

The status of *neglectus* is confused. Drs. L. Whitman and J. Lane have furnished us with a manuscript concerning their studies on the *Microculex* of Brazil. In it they describe a species to which they give the name of *neglectus*. The adults of this species, which were collected as larvae from bamboo internodes, appear to be identical with *elongatus*, except that there are no pale scales on the abdominal tergites. In this it is similar to the Lutz specimens in the U. S. National Museum. However, these authors point out that in his original description in Bourroul (1904), Lutz stated that *neglectus* did possess baso-lateral white spots, and that if this is true, then a bamboo-breeder with such spots would be true *neglectus*, and the species without abdominal markings would require a new name. Following this reasoning, *elongatus* could be *neglectus*, and the Lutz specimens, as well as Whitman's and Lane's material, are unnamed.

However, in spite of the fact that our collections have proved the existence of a species with a white-marked abdomen breeding in bamboo, we are reluctant to assume that this is the true *neglectus*, as our species was taken in a region far removed from the type locality of Lutz's *neglectus*. Apparently Whitman and Lane failed to discover a white-marked form in Brazil, and it seems probable that Lutz misdescribed his species in Bourroul. Whitman and Lane state that the dark Brazilian form, although without white scales on the abdomen, does have light apical setae which gives the suggestion of banding.

KEY TO MALE TERMINALIA OF MICROCULEX

1. Outer division of lobe of sidepiece represented by a ridge of six or more long setae, or the usual setae of the outer division obscured by a dense patch of setae..... 2
 Setae of outer division distinct, recognizable at least by the presence of a leaf (leaf present or absent)..... 5
2. Lobes of ninth tergite digitiform; sidepiece with a dense patch of setae obscuring the usual setae of the outer division of the lobe (Fig. 9) *hedys* Root
- Lobes of ninth tergite low, mound-like..... 3

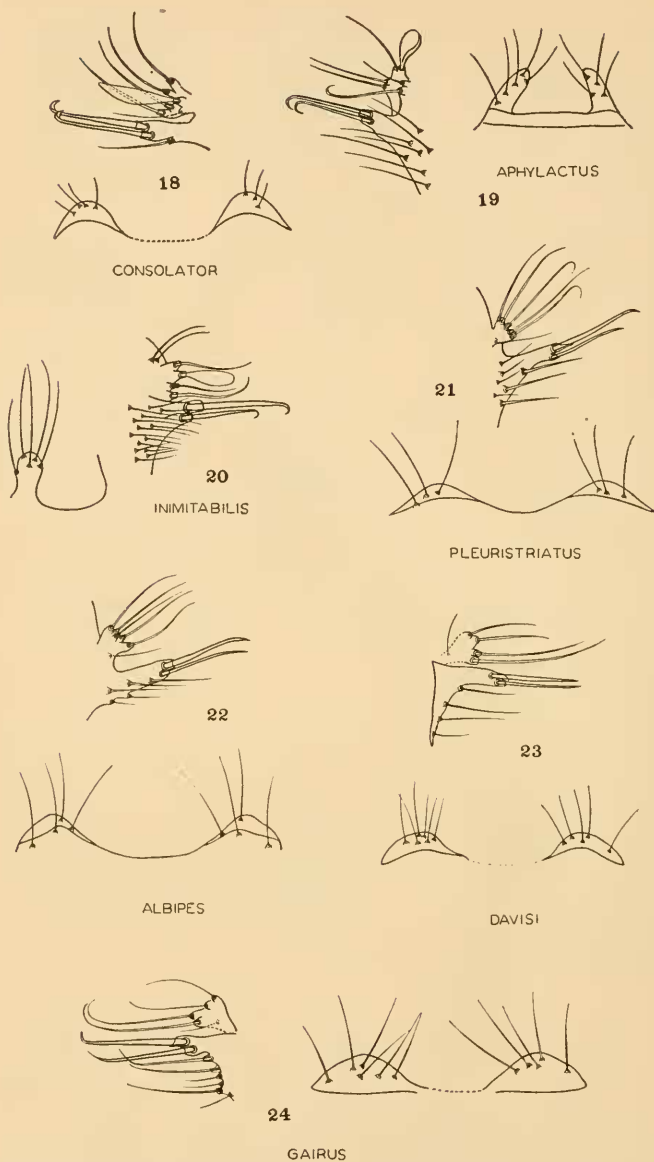


PLATE 25. *CULEX* (*MICROCULEX*), APICAL LOBE OF SIDEPIECE AND LOBES OF NINTH TERGITE OF MALE TERMINALIA

Fig. 18, *C. consolator* (from type); fig. 19, *C. aphyllactus* (from type); fig. 20, *C. inimitabilis* (from type); fig. 21, *C. pleuristriatus* (J. H. U. coll.); fig. 22, *C. albipes* (J. H. U. coll.); fig. 23, *C. davis* (USNM coll.); fig. 24, *C. gairus* (from type).

3. Outer division of lobe of sidepiece represented by a dense elongated patch of many setae (Fig. 10).....*imitator* Theobald*
Outer division represented by a ridge with about six to ten setae 4
4. Inner division of lobe of sidepiece short, stout, with several stout setae inserted basally along lower surface (Fig. 11)
daumastocampa Dyar & Knab
Inner division long, columnar, with only a single seta inserted at about the middle of the column (Fig. 12)
jenningsi Dyar & Knab**
5. Outer division of lobe of sidepiece absent, represented only by setae inserted in prominent tubercles..... 6
Outer division a distinct, elevated lobe; or, if sessile, at least with the appearance of a capitate lobe indicated by the arrangement of the setae..... 8
6. Outer division represented by a single long stout seta and several adjacent smaller, more slender setae; lobes of ninth tergite very long, slender (scutum with a large dark spot before wingbase) (Fig. 14).....*stonei* Lane & Whitman
Outer division represented by at least three large stout setae; lobes of ninth tergite shorter, broader, conical or mound-like (scutum without dark spots before wing-base)..... 7
7. Setae representing outer division of lobe arranged in two pairs of stout setae from prominent tubercles, and two slender single setae (anterior half of scutum golden-sealed) (Fig. 15)
chryselatus D. & K.
Outer division of lobe represented by three setae from tubercles (scutum dark) (Fig. 16)*rejector* D. & K.
8. Outer division of lobe of sidepiece with a leaf or a broad, flattened filament 9
Outer division of lobe without such a leaf or flattened filament 14
9. Outer division of lobe of sidepiece with a long hooked seta and a slender hairlike seta at lower angle; three or four broad, appressed filaments above, and a broad, leaflike filament inserted basad of the other filament (Fig. 17)
restrictor D. & K.
Outer division of lobe with slender, pointed setae..... 10
10. Lobes of ninth tergite low, mound-like; inner division of lobe of sidepiece without a patch of long setae at base; outer division distinctly capitate and elevated from sidepiece, with a broad filament and five stout setae (Fig. 18)
consolator D. & K.***

*Synonyms: *argenteoumbrosus* Theobald; *daumasturus* D. & K.; *marajoensis* Peryassú; *vector* D. & K.

**Synonym: *gaudeator* D. & K.

***Synonym: *trychnus* Root.

- Lobes of ninth tergite digitiform; a rather dense patch of long setae on sidepiece below the base of inner division of lobe; outer division sessile, appearing capitate through arrangement of setal tubercles and pigmentation of the integument between them 11
11. Outer division of lobe of sidepiece with the leaf and five setae arranged in pairs, the basal pair consisting of a long hooked seta and a small slender hair; lobes of ninth tergite thumb-shaped, convergent (Fig. 19) *aphylactus* Root*
- The two basal setae of outer division separated from one another, and consisting of a long stout hooked seta and a smaller, but rather stout one; the usual setae more or less obscured by a dense patch of hairs; lobes of ninth tergite clubbed 12
12. Leaf of outer division obovate, with short stem; (siphon of larvae about 10 x 1; from bromeliads) (Fig. 20) *inimitabilis* D. & K.†
- Leaf of outer division with a slender stem, the outer half roundly expanded; (siphon of larvae 14 x 1; from bamboo)..... 13
13. (Adult male with broad basal white bands; the female with large baso-lateral white spots) *elongatus*, new species (Adults with abdomen completely dark)..... *neglectus* Lutz
14. Outer division of lobe of sidepiece with five long, stout, marginal setae, and one or two small basal hairs..... 15
- Outer division of lobe with two long and two smaller setae, and a basal hair..... 16
15. Outer division of lobe of sidepiece with two small basal hairs, in addition to the five large setae (scutum dark) *worontzowi* Pessôa & Galvão**
- Outer division with one small basal hair in addition to the five large setae (scutum with a reticulate pattern of lines of white and golden scales across a background of dark scales) (Figs. 21, 22) *pleuristriatus* Theobald, *albipes* Lutz***
16. (Scutum dark; tarsi dark except for narrow pale band at tibio-tarsal junction) (Fig. 23) *darisi* Kumm
- (Scutum with reticulate pattern formed by golden scales; hind tarsi with narrow white rings) *gairus* Root

*Root (1927) described this species as without a leaf. In the type specimen, the leaf on the sidepiece illustrated by him is seen on edge; however, a distinct leaf is visible on the lobe of the opposite sidepiece, as illustrated in Fig. 19.

†Synonym: *microphyllus* Root.

**The larvae of *C. worontzowi*, as described by Pessôa and Galvão (1935), differs markedly from the larvae of *pleuristriatus* and *albipes*, in that in the former the siphon is long and slender, about nine times as long as the width at the base, and tapers to the apex, whereas in the latter two species it is short and fusiform.

****C. pleuristriatus* and *albipes* are separable in the adult female and the larvae, according to characters described by Kumm (1933). The patch of setae near the apex of the sidepiece mentioned by this author for *pleuristriatus* does not always seem to be distinct enough to separate this species from *albipes*.

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SARA HOKE DEBORD

1899-1950

Sara Hoke DeBord died March 12, 1950, at her home in Sardis, Mississippi, after a prolonged illness.

Mrs. DeBord was born in Como, Mississippi, September 9, 1899. In her early years she attended schools in her native state, receiving a B.S. degree from the Mississippi State College for Women in 1921. Later she took postgraduate work at the University of Chicago and at Iowa State College where she was granted an M.S. degree in 1924 and obtained additional credit toward a Ph.D. degree in 1925.

Early in life Mrs. DeBord showed interest and ability along artistic lines and while acquiring her formal education took special work in the graphic arts. Later, while living in Washington, she studied at the Corcoran School of Art. In college she majored in the biological sciences, receiving her Master's degree in entomology.

Before entering Iowa State College Mrs. DeBord had a brief appointment in the Bureau of Entomology, and at Ames taught entomology and biology while doing postgraduate work. From 1926 to 1933 she was engaged in preparing slide mounts of microscopic insects and in making scientific illustrations for various persons. In January 1933 she came to the Division of Insect Identification of the Bureau of Entomology where she remained, and rendered exceptionally fine service, until her retirement on disability in December 1948.